

Soybean Digest



Official Publication

OF

THE AMERICAN SOYBEAN ASSOCIATION

VOLUME 2 • NUMBER 3

JUNE • 1942

MARKET SUMMARY

SOYBEANS			
	June 10	May 24	May 9
July (old)	1.69½	1.78½	1.87½
July (new)	1.71½	1.80B	1.88¾B
October	1.69½	1.72½	1.82½
December	1.71½		

SOYBEAN OIL			
Tanks, Midwest Mills	11½c	11½c	11½c

SOYBEAN OILMEAL			
	June 5	May 26	May 9
July	32.00	32.50	35.90
	@32.75	@33.00	@36.25
October	32.25	33.00	35.75
	@33.00	sales	@36.25
December	32.25	32.75	
	@33.00	@33.25	

CASH CONVERSION SCALE

1 Bushel Soybeans, wt. 60 lbs. \$1.68¼

INTO

8.8 lbs. crude oil @ 11½c 1.012
49.5 lbs. Meal @ 1.6c .792

1.804

Gross Processing Margin per Bu. 12.15c

Gross Processing Margin per Bu. Last Month 12.6c

Note: The values listed here are relative, and cannot correspond with your own transactions. Using your own figures, you can compute your own scale. This scale will show general trends.

STANDARD SHORTENING SHIPMENTS

(By Members of Institute of Shortening Mfgs., Inc.)

Week ending May 30	6,285,000
Week ending May 23	5,410,447
Week ending May 16	5,504,838
Week ending May 9	5,156,105

For the first time since the government price ceiling was imposed soybean oil dipped below the legal maximum ¼c last week. Beans and meal continued their declines during the month.

**Get Set
For 1942
Record
Harvests**



You'll need extra storage this year. Plan now with Neff & Fry engineers for additions to your elevator capacity.

Neff & Fry bins are of two types . . . slip-form poured monolithic and super concrete stave. N & F stave type bins are made of high strength concrete staves, interlocking and diagonally pointed, and reinforced with steel hoops. Here is the outstanding low cost, long life bin built today.

Capacity, housings, compartments to your individual specifications. Get the Neff & Fry recommendations without obligation.

THE NEFF & FRY COMPANY
CAMDEN, OHIO

NEFF & FRY STORAGE BINS

THE Soybean Digest

Vol. 2

JUNE ★ 1942

No. 8

IN THIS ISSUE

	Page		Page
Market Summary	Inside	Bigger Hogs, More Meal	7
	Front Cover	"Battle of the Soybean" IV	8
Editorials	2	Soybeans and People	10
Soy Meal in Plastics	4	Soy Win on New Front	12
Soy Win on New Front	6	Feed More Protein	12

Published on the 15th of each month at Hudson, Iowa, by the American Soybean Association. Entered as second class matter November 20, 1940, at the postoffice at Hudson, Iowa, under the Act of March 3, 1879. Forms close on 10th of month. Subscription price to association members, \$1.00 per year; to non-members, \$1.50 per year.

NUTRITION FRONT VITAL TO WAR

Add SOY FLOUR to your favorite recipes for "protective" nutritive value

1 lb., 18c 5 lbs., 79c

Exceptionally high in the Anti-Gray Hair Factor of Vitamin B

Write for a price list on

Natural, Vital Foods

DIABETIC FOODS

Minerals and Vitamins

PREHN'S HEALTH FOOD STORE

700 S. Goodwin

URBANA, ILLINOIS

Telephone 6-1691

WOODSON-TENENT LABORATORIES

MEMPHIS, TENNESSEE and CAIRO, ILLINOIS

*Analysis of Soybeans
and Products*

Official Chemists for National Soybean Processors Association

BEFORE SELLING, PLEASE CONSULT

STERNE & SON CO.

"JUST BROKERS"

Oldest Handlers of Soyabean Oil

Direct to All Refiners

Board of Trade Building

Telephone:

CHICAGO, ILLINOIS

HARRISON 4797

"Jack's Beanstalk" goes all out for War Production!



The largest soybean planting in American history is popping up through the soil of the U. S. A.

Uncle Sam asked for a 54% increase in soybean production this year—and the American farmer is out to see that he gets it.

Often referred to as "Jack's Beanstalk", because of its spectacular growth from an Oriental curiosity to a \$200,000,000 cash crop, the soybean plant counts heavily in Uncle Sam's war plans. While the bulk of the crop will go as before to fattening cattle and making hens lay more eggs, a big share will go to the war effort.

Airplanes need soybean meal for plastic parts; the Navy wants soybean oil paint; the tire industry must have the "lethicin" from the soybean for bullet-proof tires for armored cars; war workers look to

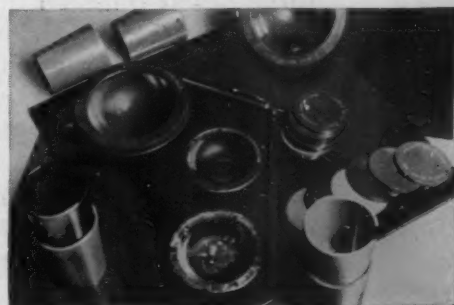
the soybean for protection, in the form of plastic helmets; shipyards call for soybean glue to laminate hulls and decks of those rip-roaring mosquito boats.

Pennsylvania Railroad, with farmers and processors, looks with gratification on the new importance of the soybean. The Railroad was an early pioneer in the development of soybean production and markets. So great was its faith in the future of this new crop that in 1937 it designed and completely outfitted the first Soybean Exhibit Car. That car toured practically every agricultural county in 18 states. RESULT: Soybean planting shot way ahead, and has continued to do so ever since.

Today Pennsylvania Railroad serves an area producing 73% of this year's crop—and its cars will be on hand to roll "soybeans to victory".



More than 150 uses shown here! Interior of the Pennsylvania Railroad Soybean Exhibit Car. Farmers could scarcely believe their eyes when they saw in how many forms the soybean was being used commercially. The car itself was fully decorated with an all-soybean-oil paint.



Saving vital metals for war needs! Many plastics were unknown until recent years but today this vast new industry permits non-metallic compositions to serve in numerous ways in place of badly needed metals. And soybeans play a big part in this conservation program as soybean meal is a fine basic material for plastics.



Big mills from little beans grow! This great milling plant on the Pennsylvania Railroad is one of many that have come into existence since the development of the "miracle bean". Over half a million people now derive income from the production and processing of soybeans.

Pennsylvania Railroad

THE *Soybean Digest*



Published by the American Soybean Association, Hudson, Iowa, as a service to its members. Forms close on 10th of month. Subscription price, to association members, \$1.00 per year, to non-members, \$1.50 per year. Advertising rates on application.

GEO. M. STRAYER, Editor

KENT PELLETT, Managing Editor

Publishers' Representatives: Ewing-Hutchinson Co., Chicago

VOL. 2 • NO. 8

IN recent years there have been many rumors concerning the curtailing, discontinuation, and moving of the work of the Regional Soybean Industrial Products Laboratory which has been located at Urbana, Illinois, on the campus of the University of Illinois. Recent rumor had it that the work would be discontinued at Urbana, and moved to the new Northern Laboratory at Peoria. The appropriations bill for the Department of Agriculture seemed to set aside funds for just that purpose.

In order to check with proper authority and determine exact status your secretary wrote to Dr. Henry G. Knight, chief of the Bureau of Agricultural Chemistry and Engineering, who exercises jurisdiction over all four of the new Regional Laboratories. We quote from Dr. Knight's reply:

"The proposal to transfer the Regional Soybean Industrial Products Laboratory from Urbana, Illinois, to the Northern Regional Research Laboratory at Peoria, Illinois, was initiated in the Agricultural Appropriations Subcommittee of the House Appropriations Committee.

"If this action is finally approved by the Congress, I can assure you that the work of the Soybean Laboratory will be continued at the Northern Laboratory in at least its present form. The research now being carried on at Urbana is composed of (1) Work on the breeding and culture of soybeans, done by the Bureau of Plant Industry, along with the analytical work necessary to its proper prosecution. This project will remain at Urbana. (2) The chemical research work. This will be transferred to Peoria and carried out, as I said above, in its present form but with increased facilities."

There was action in both the House and the Senate

to restore funds for continued operation of all phases of the work at Urbana. What the final outcome will be no one can say as yet.

THE 1941 crop of soybeans has caused many headaches. Among them is the one acquired by the processors when they started purchasing high moisture content beans — much higher than ever before — and using the electrical moisture testers in their determinations. Apparently the electrical testers are not true indexes of moisture content in soybeans when the moisture content is above 15 percent.

Processors found to their sorrow that beans showing an 18 percent moisture test on a Tagg-Hempenstahl or a Steinlite just would not check out when they were processed. The moisture indicated by the tester did not correspond with that lost in the drying process contingent to oil extraction. The higher the moisture content of a specific lot of beans, the greater the spread between the tester figures and processing losses.

Elsewhere in this issue is a story on the adoption of the air-oven method of moisture determination as official by the Agricultural Marketing Administration of the U.S.D.A. The change was made from the water oven in order to compensate for results being received by processors. But this change will not affect the testing of beans at country stations or at most processing plants. It affects only the tests at terminal markets — where given federal inspection.

Processors are considering the purchasing of beans wholly on the basis of Brown-Duvel moisture determinations. There is no question but what the Brown-Duvel tester more closely approximates the actual processing of beans than any other method. The moisture is removed by a cooking process, as it is in actual plant practice. Electrical testers, depending upon conductivity of electric current, do not seem to duplicate plant reaction under high moisture conditions.

Practically every country elevator has Brown-Duvel equipment in the back room now. In order to be safe on bean purchases we suggest you run Brown-Duvel tests on any beans which are questionable. You will

THE AMERICAN SOYBEAN ASSOCIATION

OFFICERS

President — David G. Wing, Mechanicsburg, Ohio
Vice President — J. E. Johnson, Champaign, Illinois
Secretary — George M. Strayer, Hudson, Iowa
Treasurer — J. B. Edmondson, Clayton, Indiana

DIRECTORS

G. G. Mellroy, Irwin, Ohio
Ersel Walley, Fort Wayne, Indiana
Howard Roach, Plainfield, Iowa
Stuart Ormsby, Belleville, New York
John Dries, Saukville, Wisconsin
Jacob Hartz, Stuttgart, Arkansas

then be on the safe side. Processors are considering that practice.

And don't forget that your Brown-Duvel should be standardized in accordance with instructions from the manufacturer. Instructions can also be obtained from the Grain Marketing Service of U.S.D.A. A Brown-Duvel which is not standardized may be just as far wrong as an electrical machine.

HARVESTING equipment for the 1942 soybean crop will be at a premium. With the huge increase in acreage, combines will be pressed into service for longer hours and over longer periods of time. Governmental agencies have recognized the importance of having adequate harvesting facilities available. Priorities have been granted on sufficient material to manufacture approximately 24,000 new combines for use in 1942.

Careful checks with federal officials have lessened our fears that they were not aware of the urgency. New machines are in process of manufacture. It now appears that there will be little more than 200 acres of soybeans for each combine in the soybelt. Careful management of time and machinery will enable the crop to be harvested in good shape — if we have a normal harvesting season.

THERE has been considerable discussion among the members of the board of directors of the ASA as to plans for the 1942 convention. With other organizations cancelling their annual sessions, with tire rationing in effect, and with talk of gasoline rationing in the Midwest, there was some question as to the advisability.

Yet the soybean industry has taken a bigger jump this year than ever before in history. New problems in harvesting, marketing, storage, financing are arising. Never before has there been so much active interest in the industry.

It is now definitely decided that **THERE WILL BE A CONVENTION** of the American Soybean Association at Purdue University in September. Definite dates will be announced next month. Contacts are being made on a program. Arrangements on convention facilities are proceeding.

PLAN NOW TO ATTEND — AT PURDUE — IN THE THIRD WEEK IN SEPTEMBER.

THE SOYBEAN DIGEST is now on the air — literally.

On Thursday, June 18, your secretary initiated a series of weekly broadcasts over radio station KXEL, a new 50,000 watt station aimed at the farm audience, and located at Waterloo, Iowa. Operating on a coast to coast cleared channel at 1540 kilocycles, the new station is donating a 15 minute period at 6:15 A.M. every Thursday. Pertinent news within the soybean industry will be covered, stories in The Soybean Digest will be reviewed, and an occasional bit of publicity for the American Soybean Association and its magazine inserted. Listen in!

STORAGE space for the 1942 crop of soybeans is receiving the attention of governmental agencies, of grain handlers, and also of growers. With prospects pointing toward a heavy crop of small grain, with corn acreage up about 10 percent over 1941 figures, and with more than a 50 percent increase in soybean acreage, storage space will be at a premium. Commodity Credit Corporation steel bins are being offered for sale in many localities, but many of them are being shipped westward for wheat storage. Next month we will feature storage facilities for soybeans, with pointers on simple and economical bins for farm or elevator use.

JUNE, 1942

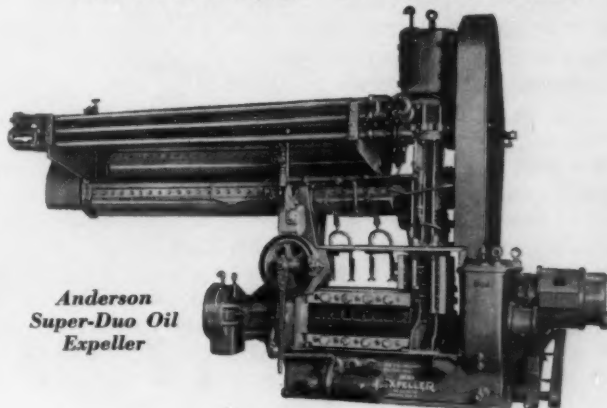
WHAT



DO YOU WANT TO KNOW ABOUT OIL MEAL PRODUCTION EQUIPMENT?

● If you are considering a new mill or enlarging the facilities of your present establishment, you have probably given a lot of thought to new equipment. Of course, the heart of any good mill is an Expeller, for there are more soy beans pressed by the Expeller method than all other methods combined. But you may be interested in filters, storage tanks, handling and all other equipment. You probably want to know what equipment works best under certain conditions. There's one man who can really give you sound advice on this subject—and that's an Anderson Expeller Engineer. His years of experience in hundreds of plants or mills will be invaluable to you. He knows what equipment works and what doesn't. He knows what combination of equipment will produce oil meal of a low oil content. And his suggestions are free. Better hear what he has to say before you invest money in oil meal equipment. Write today.

THE V. D. ANDERSON CO.
1958 W. 96th Street • Cleveland, Ohio



Anderson
Super-Duo Oil
Expeller

SOY MEAL IN PLASTICS

By LEONARD L. MCKINNEY

U. S. Regional Soybean Industrial Products Laboratory*
Urbana, Illinois



U.S.D.A. Photo by Killian

A chemist pours oil-free soybean oilmeal flakes into a mixer, where phenol and formaldehyde are incorporated to form a plastic.

*A cooperative organization participated in by the Bureau of Agricultural Chemistry and Engineering and Plant Industry of the U. S. Department of Agriculture, and the Agricultural Experiment Stations of the North Central States of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

BECAUSE of the present emergency in which plastics are being used to replace metals, there is a severe shortage of plastic molding powders. The most common thermosetting molding powder is the phenolic type. One hundred fifty to two hundred million pounds of this type of molding material was produced in 1941. It is usually produced by condensing phenol and formaldehyde to form a fusible resin and subsequently compounding the resin with an equal part of wood flour, along with catalysts, lubricants, and coloring materials.

It has long been known that phenols and phenolic resins are compatible with soybean protein and soybean meal. Advantage has been taken of this fact to utilize the adhesive properties of soybean meal for supplementing those of phenolic resins in the phenolic resin-wood flour type of plastic. This development enables manufacturers to conserve the more expensive phenolic

resin by replacing part of it with soybean meal.

The greatest problem involved in producing a plastic containing soybean meal is attainment of water resistance. Since soybean meal is highly water absorbent, it tends to impart this property to plastics when used as an ingredient. Treatment with formaldehyde improves the water resistance of soybean meal, but at the same time it decreases plastic-flow characteristics.

Another problem is to avoid increase in curing time. Thermosetting materials are discharged from a hot die while, with thermoplastic

Oil-free soybean meal is not suitable for use in plastics without some modification. Soybean meal contains about 10 percent soluble sugars as well as other soluble materials which decrease water resistance. Thus if the untreated meal is used, blistering is likely to result probably due to decomposition of sugars. If meal is used, it must be washed free of soluble materials. This washing must be carried out with water adjusted to the isoelectric point of the protein, pH 4.1-4.3, in order to prevent leaching out some of the protein.

After washing out the soluble



Representative plastic pieces molded from soybean-phenolic molding powder.

materials, the die must be cooled in order to set the plastic. Soybean protein is thermoplastic, provided a plasticizer is used. Phenolic resins in the early stage act as plasticizers for soybean meal. When the resin polymerizes to the insoluble, infusible state it no longer plasticizes the protein material and plastic flow stops. As a result the whole mixture sets up giving a thermosetting plastic which may be removed from the hot die.

sugars the meal must be given a heat treatment in order to denature or insolubilize the protein. This denaturation is carried out in the laboratory by raising the moisture content of the meal to about 20 percent and heating under pressure at a temperature of 225° to 250° F. for 2 or 3 hours. If the pressure is released suddenly, most of the water escapes as vapor and a dry product is obtained which is suitable for use in plastics. Somewhat the same results may be ob-

tained by drying the wet leached meal at moderately high temperatures.

When protein is extracted from soybean meal a residue is left which is free of water-soluble sugars but may contain from 40 to 60 percent protein. If this material is heat-denatured, it makes an excellent material for use in phenolic plastics.

Molding Powder

The following formula is typical of methods used for preparing molding powders in the laboratory:

94 parts phenol (1 mole ratio)
56 parts leached soybean meal, heat-treated
5 parts hydrated lime
Mix well and allow phenol to soak into meal.

Add 122 parts 37-percent formaldehyde solution (1.5 moles).

Heat in closed, steam-jacketed mixer for 15 minutes with steam pressure of 20 pounds per square inch.

Heat 1 hour with jacket temperature of 190° to 210° F.

Add 112 parts wood flour,
1 part calcium stearate,
1 part stearic acid,
11.66 parts hexamethylenetetramine (equivalent to 0.5 mole of formaldehyde).

Mix well and dry in air or vacuum at room temperature to a moisture content of less than 5 percent.

Work on hot calendar rolls or in Banbury mixer for 1 to 3 minutes. Grind to approximately 16 mesh to obtain molding powder.

The resin-forming reaction may be carried out in an autoclave or any steam-jacketed mixer which can be

closed to prevent the escape of formaldehyde during the reaction. Drying may be accomplished by exhausting the air from the mixer or by spreading the material out for air drying.

A number of modifications may be made in the formula given above in order to modify properties of the molding powder or of the finished plastic. For example, hydrated lime may be replaced by barium hydroxide, calcium oxide, barium oxide, or ammonia. Hexamethylenetetramine may be replaced by paraformaldehyde, and part of the phenol may be replaced by cresols. Part of the wood flour may be replaced by asbestos fiber in order to give a faster-curing molding powder or a finished plastic with increased heat resistance.

20 Per Cent Soy

From the proportions of phenol and formaldehyde specified in the formula, approximately 112 parts of phenolic resin will be produced. Half as much soybean meal (56 parts) and 112 parts of wood flour are specified. Therefore, the molding powder will have a composition of approximately 40 percent phenolic resin, 20 percent soybean meal, and 40 percent wood flour. The properties of such a plastic compare favorably with those of a phenolic plastic containing 50 percent phenolic resin and 50 percent wood flour and offers a saving of 10 percent in resin content.

The amount of soybean meal in the molding powder may be increased

to 30 percent with proportionate decrease in phenolic resin. However, an increase in meal content gives a plastic of increased water absorption and lower flexural and impact strengths. The molding powder made with higher meal content usually requires longer curing time and more pressure for molding.

It should be noted that best results have been obtained by forming the resin in the presence of the soybean meal as described above. Success of this procedure may be accounted for by assuming that the protein reacts with the resin in some manner and forms a perfectly homogeneous mass.

10 Per Cent Soy

The conventional method for preparing phenolic-type molding powders involves making a fusible resin and grinding it with wood flour, catalysts, pigments, and lubricants in a ball mill. The powdered mixture is then compounded on hot calendar rolls to obtain uniformity, and is again pulverized after cooling. The following formula is an example of this method in which 10 percent treated soybean meal is used.

40	percent two-stage phenolic resin
5	" hexamethylenetetramine
40	" wood flour
10	" treated meal
2	" hydrated lime
1.25	" stearic acid
1.75	" nigrosine dye

100 percent

Ball mill 24 hours.

Roll for 3 minutes with cold roll at 120° F. and hot roll at 205° F.

This material gave flow and strength properties comparable with molding powder made with 50 percent resin and 45 percent wood flour used as in the formula given above.

Replacing Resin

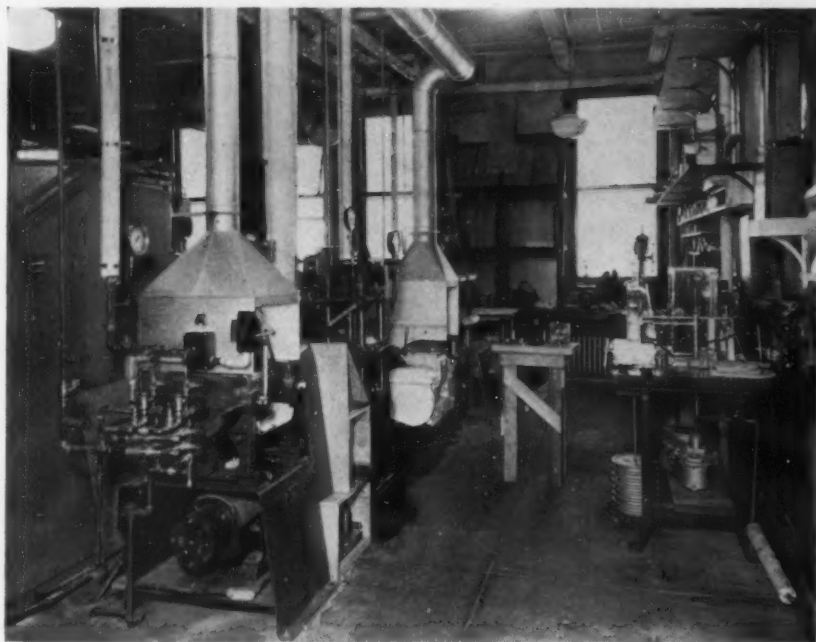
A large number of molding powders have been made in the laboratory in which the resin, wood flour, and meal contents were varied. It was concluded that a leached, denatured soybean meal can be used to replace as much as 5 or 10 percent of the more expensive resin without altering appreciably the curing time and strength properties of the final plastic. Since the meal is only about 50 percent protein, the remaining 50 percent being inert, non-plastic material, 10 percent meal must be used to replace 5 percent resin and 5 percent wood flour.

When soybean meal is used to replace wood flour, a strikingly large increase is noted in the plastic flow

(Continued on page 11)

Beginning at left (clockwise around room): 1. Compounding rolls. 2. Hydraulic press. 3. Mixer. 4. Plastics flow tester.

U.S.D.A. Photo by Killian



SOYS WIN ON NEW FRONT

By DWIGHT L. DANNEN

THIS is another success story of the soybean. With the national goal for this crop 54 percent over last year's all time high, the goal in normally dry Kansas is 166 percent more than a year ago. Even though this is only 125,000 acres it is four times more than was produced in Kansas in 1940. All of this is new acreage of a new cash crop on a new front and will be in the eastern third of Kansas. The southeastern corner of Nebraska and northwestern Missouri are not far behind. Soybean acreages here will run up tremendous increases in the coming growing season.

Credit to Soder

There are many reasons for this phenomenally rapid spread of soybeans south and west of the corn belt. For example, a young man from Iowa, Keats E. Soder, now Agricultural Agent for the Rock Island Lines at Kansas City, believed soybeans would compare favorably with other crops farther west if given fair trials and proper production methods and varieties. Starting three years ago he called on the agricultural college authorities to seek their assistance in promoting an acreage of soybeans.

In order to secure farm yield figures, cooperative combine yield tests were instituted in 10 counties in the

states of Kansas and Nebraska with the Dannen Soybean Mill at St. Joseph, Missouri, furnishing seed of five principal suitable varieties to plant the test plots of one-half acre. These were so successful they were expanded to 30 tests last year in Kansas, Missouri and Nebraska.

Meetings Booked

Farmer meetings were held with county agents, college extension specialists, and soybean processors in the counties and communities along the Rock Island from Omaha to Fairbury, from Trenton to Kansas City and St. Joseph, and from Troy to Clay Center and Wichita. The crops specialists didn't promise sudden riches to farmers raising soybeans nor recommend them for hillsides, nor to build up worn out land. They did say they would fit any rotation, were resistant to chinch bugs which were a major menace in eastern Kansas and southeastern Nebraska, would often make a crop when other cash crops failed entirely, would enable a farmer to keep his eggs in more than one basket, were more profitable than many so-called cash crops, and would give the farmer a chance to raise his own protein supplement. Then as wheat was lost by Hessian fly, or not planted at all due to acreage control or an unusually



DWIGHT L. DANNEN

wet fall, new opportunities showed up. Finally, June rains and floods ruined a lot of corn late in June and this could be replanted to soybeans long after it was too late to plant corn.

Agents Assist

A great many farmers along the Rock Island in Nebraska, Missouri, and eastern Kansas have listened to this soybean story in the last three years. College men and county agents, realizing soybeans were spreading, willingly boosted soybeans for bottom land and for gumbo soils. They agreed that yellow beans, as dual purpose beans, were better for the farmer than black or brown beans which are not wanted by processors and hence could be used only for hay. Their principal concern was to keep beans off slopes in order to prevent erosion. At every meeting this faculty of the soybean to improve soil tilth was given greatest possible emphasis. Naturally the railroads expect to run a long time, and to destroy the soil would be very short sighted.

As a result of these meetings, publicity and the combine test plots, and before the recent rise in prices, Kansas in 1941 produced 80% more beans for grain than in 1940, Nebraska increased its production 500%, and Missouri 70%. Unrestricted use of soybeans for grain as a soil-conserving crop and the high price last fall were also potent factors in the increase in harvested acres last year.

(Continued on page 7)

This is a harvest demonstration on soybean test plots at Falls City, Richardson County, Nebraska, October, 1941.



Bigger Hogs, More Meal

GOING back to the old lard-type hog of World War I and increasing soybean production are the best ways of obtaining the much-needed fats and oils this year, according to D. Gale Johnson and T. W. Schultz in the May Iowa Farm Economist.

Johnson and Schultz warn that "the scarcity of fats and oils is, next to rubber, the most serious of all our wartime shortages."

They point out that the expected increase of 1 billion pounds of vegetable oils, from soybeans, cottonseed, flaxseed and peanuts, will not even replace the loss of oil imports to this country from the southwest Pacific. The authors call for a stepping up of hog weights from 225 to 325 pounds as "the most efficient method of increasing fat production." They say that the increased hog production at the old weights would only increase lard output by 400 million pounds, but that it will be possible to obtain an increase of a billion pounds by feeding out heavier hogs. They urge the Department of Agriculture to guarantee a minimum price for hogs of 270 pounds or more.

To complete the picture, Johnson and Schultz suggest that the AAA might subsidize the purchase of such high protein feeds as soybean meal for balancing hog rations, as it now subsidizes the purchase of lime. Should all the meal from the increased soybean production this

year be fed to up hog weights from 225 to 325 pounds, it would result in an enormous increase in total fat production, they say. Soybeans will produce a total of 520 pounds of fats per acre (from oil and lard). This compares with 234 pounds from peanuts and 149 pounds from cottonseed.

This trend toward heavier hogs is encouraging to soybean growers, because the market is certain to sponge up hungrily all the oils and fats that can be produced from any source, and because the hogs will help to eat up any surplus bean meal produced this year.

— s b d —

GO DOWN FOR SEED

Farmers who are planting late soybeans should be especially careful in selecting their seed, as hot weather spoils soybeans. They should go down into their bins at least 1½ feet for seed if they want maximum germination.

This is indicated by tests run by the University of Illinois College of Agriculture. J. C. Hackleman, crops extension specialist, says beans from the top 12 inches of the university bins showed reduced vitality the first year, and two-year-old beans from the same level were virtually worthless. Beans from deeper in the bins retained their vitality fairly well even the third year following harvest.

And Raphael Kleiss, Pesotum, Ill., has had similar results. Only 10 per cent of the seed from the top layer of his soy bin germinated, while seed from 4 feet down turned out 82 per cent.

— s b d —

SOYS WIN ON NEW FRONT

(Continued from page 6)

Railway Men Help

Again this spring the Rock Island Agricultural Department has co-operated with other agencies in publicizing and popularizing soybeans by organizing and holding 46 county-wide soybean clinics in northwestern Missouri, southeastern Nebraska, and northeastern Kansas. Mr. Soder had the assistance of agricultural agents for two other interested railroads, Harold W. Benn, Union Pacific Railroad, Omaha, and S. J. Oberhauser, Milwaukee Railroad, Minneapolis. Others who cooperated are E. A. Cleavinger, Extension

Agronomist, Kansas State College, Manhattan, G. T. Webster, Assistant Extension Agronomist, University of Nebraska, College of Agriculture, Lincoln, and J. Ross Fleetwood, Extension Crops Specialist, University of Missouri, Columbia. Soybean mills sending out their men on these meetings to help boost local production of the crop they process were the Dannen Grain & Milling Company, St. Joseph, Allied Mills, Omaha, and the Pete Marr Soybean Mill, Fremont, Nebraska.

The total attendance at this spring's meetings was 3200. The strong interest is evidence that the quota will be met in Kansas, and that Nebraska and Missouri will follow close behind. The guaranteed price of \$1.60 per bushel on the farm, and the prospects of continued high prices all are helping build interest in growing soybeans west of the corn belt.

Meeting Plan

All of the meetings follow a general plan in which the local county extension agent acts as chairman, the college extension agronomist gives authoritative information on cultural practices, recommends adapted varieties, principally Dunfield and Illini, and warns against possible losses from weeds and erosion, a representative of the nearest soybean mill describes soybean grades, processing methods, and production and price trends, Union Pacific and Milwaukee Railroad agricultural representatives describe soybean products and wartime uses for oil and meal, and Soder representing the Rock Island Lines shows colored slides illustrating various phases of soybean history, production, feeding, and uses. This program is planned so that a complete story of soybean production is given and the questions in the minds of new growers are answered.

All goals are being over-subscribed. The only limiting factor will be availability of satisfactory seed. Results prove that soybeans are meeting new successes yearly on the western front. Now it truly can be said — "Soybeans Rocket West."

— s b d —

NEW CATALOG BY SEEDSBURO

Seedsburo Equipment Company, formerly operated under the name of Seed Trade Reporting Bureau, Inc., has just issued a new 1942 catalog. This 80-page book of grain testing equipment is available to all grain dealers and will be sent free on request by addressing Seedsburo Equipment Company, 223 W. Jackson Blvd., Chicago, Ill.



KEATS E. SODER

"Battle of the Soybean" IV

PENNSYLVANIA farmers have overshot by several thousand acres the 1942 soybean quota of 30,000 acres laid down by Secretary of Agriculture Claude Wickard, reports the Interchange Bulletin of the state's AAA committee. Pennsylvania farmers have purchased over 20,000 bushels of seed through their committees. Credit for putting the program across goes to Clyde A. Zehner, vice-chairman of the Agricultural Conservation Committee.

— s b d —

SOYBEANS SECOND ILLINOIS CROP

Soybeans now are exceeded in value by only one Illinois farm crop — corn — according to the state's 1941 crop summary just released by the U. S. Department of Agriculture.

Total value of the 1941 soybean crop, exclusive of beans grown for hay or plowed under, was \$73,692,000. Production was 41 per cent greater than in 1940, but the value of the crop was fully 150 per cent greater, due to higher prices.

Acreage harvested is reported to be 2,285,000 compared to 1,995,000 in 1940, the yield 49,128,000 bushels compared to 34,912,000 in 1940.

Average yield per acre in Illinois was also greater in 1941, 21.5 bushels compared to 17.5.

The acreage devoted to soybean hay fell off markedly last year, however, dropping from 748,000 to 403,000, and the acreage plowed under dwindled from 268,000 to 55,000. This drop was doubtless due to higher soybean cash prices.

— s b d —

MORE DETAILS ON YIELD CONTESTS

Here are further details of the soybean yield contests that are being held again this year in Iowa, Illinois and Indiana. Both Iowa and Illinois will announce their state winners at their respective Farm and Home Weeks early in 1943.

Iowa

Local 5-acre contests will be sponsored by local groups, such as the chamber of commerce or the farm bureau. July 1 is the deadline for entries to be filed with the Iowa Small Grain Growers' Association,

Ames. In addition to gold medals for local prizes, the association is awarding 10 prizes of from \$25 to \$10 for state winners, plus the John Sand Trophy to the state winner.

Gist of the contest rules follows:

1. At least three individuals must enter a local contest.
2. The land measuring, harvesting and weighing must be supervised by the local sponsoring organization.
3. A representative sample of approximately one quart of seed must be collected from each acre by the individuals supervising the harvesting.
4. In order to qualify for an award the sample must comply with all requirements for U. S. No. 2 beans with the exception of moisture and weight per bushel.

5. Information concerning seed used, inoculation, fertilization, method and date of planting, tillage, field measurements and other information of interest shall be supplied to the Iowa Corn and Small Grain Growers Association within three days after harvest.

6. Harvesting must be completed by November 30, 1942.

Illinois

The deadline for the 10-acre contest was June 1, with any farmer in the state eligible to enter. Entries will be judged on the basis of yield, economy of production, oil content and quality.

Production methods are entirely up to the individual farmer. Harvesting must be done prior to November 1, supervised by a committee representing the association.

Indiana

1. Contestant must be a member of the Indiana Corn Growers' Association with dues paid by June 15 of the year of the contest.

2. The best 2 acres or more from a field of at least ten acres of yellow soys may be selected by the grower, or the yield of the entire field may be measured. For convenience, the area combined may be measured after it is harvested.

3. The county agent or leaders designated by him shall measure the field, be present at the harvest, and shall sign the following report.

4. A 1/4 pint sample shall be mailed immediately after harvest in an air tight container to K. E. Beeson, Lafayette, for moisture test and oil content determination.

5. A peck sample representative of the soys harvested should be saved by the grower and displayed at the annual State Corn and Grain Show.

State winner receives the Roy Caldwell trophy, to each county winner, provided two or more compete in the county, the Ed Shriner Jr. medal.

Market Street


We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion \$1.00.

FOR SALE — Complete Crushing Unit for Soybeans. Eight Anderson Expellers with auxiliary equipment including 72" 4-high stack cooker, 200-h.p. slip ring motor and controls, elevating, conveying and power transmission equipment. In operating condition. Subject to inspection. Will sell only as complete unit. — C. R. Campbell, P. O. Box 987, Dallas, Texas.


Buy your share of Victory this week. Victory is cheaper than defeat.

ALL OUT FOR VICTORY



WITH DANNEN'S SOYBEAN OIL MEAL

Uncle Sam needs soybean oil and American farmers are raising more soybeans to furnish this oil. That means more DANNEN'S SOYBEAN OIL MEAL will be available for production of more meat, milk, and eggs. You can cooperate by using Dannen's SOYBEAN OIL MEAL (expeller type) in your feed rations.



For LIVESTOCK AND POULTRY

DANNEN GRAIN & MILLING CO.
ST. JOSEPH, MO.



PROCESSORS



PROCESSOR IMPASSE Something of an impasse has developed in the soybean processing industry in the past 60 days.

Many small processing plants have been closed, some full time and some part time, while a number of large processors have shut down part of their facilities, despite the fact that much of the 1941 soybean crop is still on the farms.

Processors claim that the return from soybean oil meal and soybean oil, covered by government price ceilings, has not justified the recent prices paid for soybeans, and that they would have to operate at a loss, if at all.

Feedstuffs, in its May 16 issue, analyzes the situation as follows:

"1. The government wants a vastly increased supply of soybean oil in the war effort and has asked for 9 million acres of soybeans to be harvested beginning next September.

"2. Processing facilities, which have heretofore always been greatly in excess of the crop produced will be taxed to the utmost to process the 1942 crop.

"3. Meantime a substantial part of last year's

crop still remains in the country, despite current prices, which are far in excess of parity. So there is a danger of the new crop moving while much of the old crop is yet unprocessed."

The publication quotes the Bureau of Agricultural Economics:

"Although there are millions of bushels of soybeans in storage on farms and elsewhere, a number of mills are closed down for want of beans to crush. If this continues, the industry will experience its first carryover . . . in the face of the biggest coming crop in American soybean history. . . It is reported that beans are being held for better prices. . . In addition, when warm weather comes many soybeans now in storage may deteriorate rapidly because the beans were not in good condition when they went into storage last fall."

"It is likely that something will have to give way," insists Feedstuffs. "Soybean oil prices are limited by an OPA price ceiling . . . Soybean meal prices are regulated not only by prices of competitive products, but, starting May 11, by the general price ceiling. . . None of these factors, at present, offers much possibility of increased returns sufficient to make up losses. . . Even at the rock bottom of \$1.60 bu. for beans, there would be insufficient return to processors to

cover all costs at present prices of oil and meal."

— s b d —

PRICE CEILINGS AFFECT BEAN MEAL

Feeds for which ceiling prices have been established under the general maximum price regulation include all wheat offal, cottonseed meal, gluten feed and meal, **soybean oilmeal**, coconut meal, alfalfa meal, brewers' and distillers' dried grains, malt sprouts, dried beet pulp, citrus pulp, oat mill feeds and molasses.

Excluded from the regulations are hay, wheat, corn, oats, barley, rye, buckwheat, **soybeans**, grain sorghums, rice and all other grains and seeds, whole grains and seeds processed especially for use as feeds such as cracked, rolled, ground or crushed grains, linseed oil cake and meal and mixed feeds.

All storage and carrying charges are included in the maximum prices. The maximum prices must not be exceeded under any condition, but lower sales can be charged at any time.

— s b d —

Private tests conducted in Ohio recently showed Dunfield, Scioto, Manchus, Mingo, and Mandell ranking in that order in oil content.



**CENTRAL
STAR BRAND
44%
SOYBEAN
OIL MEAL**

MORE . . . More soybeans — more eggs, more milk, more meat! Soybean oil meal, and soybean oil are now a matter of defense production and we must work accordingly. A big job ahead for the grower and feeder, for the elevator, processor, feed manufacturer — a vital job that must be done well.

Soybeans hold a double value for the grower-feeder — a good cash crop, and a major source of protein for feeds.

Growers and feeders in the areas served by our plants will find us prepared — to handle their increased acreage of beans, and to furnish them with properly balanced feeds for increasing growth and production in livestock and poultry.



**CENTRAL
BRAND
41%
SOYBEAN
OIL MEAL**

A Basic Source of Vegetable Protein

in Master Mix Feeds and Concentrates

CENTRAL SOYA CO., INC., and McMILLEN FEED MILLS

MILLS: DECATUR, IND., and GIBSON CITY, ILL.

GENERAL OFFICES, FORT WAYNE, IND.

SOYBEANS... and People

IF YOU are interested in making a trial of the new vegetable soybean in your garden there is still time to do so this season. Early edible varieties planted in the Middle-west by July 1 have a good chance of maturing to the green vegetable stage before frost.

Sac, one of the three varieties recommended for Iowa conditions by the state experiment station — the other two being Kanro and Jogun — matures in about 95 days. Kanro comes on about a week later. The Bansei variety, which is the most common of the edible soybeans, is very similar to the Kanro and is of about the same maturity. The Illinois station reports that Giant Green is even earlier than Sac, maturing in 88 to 95 days. So a July 1 planting should produce green beans ready for the table early in October.

The vegetable soys can be canned very satisfactorily either by cold-pack or pressure cooker methods. Experiments at Iowa State College showed very little spoilage in beans processed in the water bath for over 3 hours. They kept their color even better in glass jars than when processed in tin. So you may well plan to include some jars of green soybeans in your next winter's cellar stock.

In the garden, similar methods of cultivation to those used for common snap or lima beans may be used, although soybeans, having a larger habit of growth, do well with a little more room. The University of Illinois experiment station recommends a space of from 2 to 3 feet between rows, and 1½ to 1½ inches in the rows, when plenty of seed is available. Spacing the seed 3 to 4 inches apart, if there is only a small amount, allows for free branching and a phenomenal yield. Best planting depth is 1½ to 2 inches.

Most edible varieties produce a somewhat smaller plant than the field-type soybean.

Experiments show some advantage in inoculating, though a good combination of soil and weather will produce a crop without.

— s b d —

EDIBLE BEANS HERE TO STAY

Most Iowa gardeners who have tried it believe the edible soybean

has come to stay, in our gardens and diet.

During four years the Iowa Agricultural Experiment Association at Ames carried on cooperative experiments with Iowa gardeners, using the Kanro variety. Two hundred and forty-eight packets of seed were sent out, and some interesting results were obtained.

The majority of cooperators reported a larger yield than could be obtained from snap or limas, and were much impressed with the drouth resistance of the soys.

There were many comments on the distinctive, rich flavor and nutty texture.

But some objected that rabbits and grasshoppers liked the bean plants even better than other garden items, and complained about the labor involved in shelling the green pods.

A number of midwest firms are now offering seed of the edible varieties. And some commercial canneries are processing the product.

— s b d —

MIDSUMMER RECIPES

Here are some recipes containing soybeans that you might try during the hot days coming. They are from the kitchens of the Edison Institute, Dearborn, Michigan.

SALAD

- ½ cup raisins
- ½ cup chopped apple
- ½ cup boiled soybeans
- ½ cup chopped celery
- Mayonnaise dressing.

Serve on crisp lettuce.

SALAD

- ½ cup soybean cheese
- ½ cup raisins
- ½ cup chopped apple
- ½ cup chopped nuts

Serve on crisp lettuce.

SALAD

- 1½ cups cooked soybeans
- 1 cup diced carrots
- 1 tsp. finely cut onions
- 1 cup diced celery
- 1 cup shredded cabbage
- ¼ cup French dressing

Mix and serve on crisp lettuce.

SANDWICH SPREAD

- 3 tbsp. soy butter
- 2 tbsp. sweet cucumber pickles, chopped
- 3 tbsp. lemon juice
- 1 tbsp. mayonnaise

Mix.

WAFERS

- ¾ cup brown sugar
- ½ cup butter
- 2 eggs
- ¼ tsp. salt
- ½ tsp. vanilla
- 3 tbsp. soybean flour
- ½ cup roasted soybeans, finely chopped.

Mix together sugar, butter, salt, and vanilla until light and creamy. Add eggs one at a time. Add soybean flour and soybeans. Drop by teaspoonfuls on well-greased baking pan 2 inches apart. Bake in low oven (300° F.) for 8 to 10 minutes. When golden brown take out of oven and let cool for 3 to 4 minutes. While still warm roll on small stick.

— s b d —

U. S. D. A. APPROVES GRADE CHANGE

An amendment to the Official Grain Standards of the United States for soybeans, making the air oven method the official basic method for determining moisture content, has been approved by the U. S. Department of Agriculture. The amendment becomes effective September 1, 1942.

The amendment followed a survey of the problem of determining the moisture content of soybeans and discussions of the proposal at public conferences held early in May at Toledo, Chicago, Peoria and Cedar Rapids. No changes are made in the maximum percentage limits of moisture in the respective grades for soybeans.

The amendment, Section 26.610 (c) follows:

(c) Percentage of moisture. Percentage of moisture shall be that ascertained by the air oven and the method of use thereof described in Service and Regulatory Announcement No. 147 of the Agricultural Marketing Service of the United States Department of Agriculture, or ascertained by any device and method which give equivalent results.

— s b d —

SKELLY MAN TO ACTIVE DUTY

Dr. A. E. MacGee, manager of Skellysolve and Skellyfuel Division for Skelly Oil Company, who is a Lieutenant Commander in the U. S. N. R., has been ordered to active duty in the Bureau of Ships at Washington, D. C.

Commander MacGee, who served with the First Division in France and Germany in the last World War, has been with Skelly Oil Company since 1929.

SOYS IN PLASTICS

(Continued from page 5)

of the molding powder. In other words, a very free-flowing molding powder may be produced by using 50 percent resin, 40 percent wood flour, and 10 percent treated meal or protein residue. Such free-flowing molding powders are usually made by using 60 percent resin and 40 percent wood flour.

Colored Plastics

Both phenolic resin and wood flour are difficult to dye, and colors are therefore usually obtained by using pigments. Soybean meal offers a protein base for dyeing and tests show that phenolic plastics containing it are more stable to light than are phenolic plastics made without soybean meal when both kinds are colored with organic dye. Color may be obtained as follows:

Black—2 percent nigrosine dye.

Brown—2 percent burnt umber and 1 percent brown dye.

Red—2 percent white clay and 2 percent Phenoform Red (General Dye-stuff Corporation).

Blue—2 percent white clay and 1 percent Duratint Blue 1001 (Federal Color Laboratories).

Green—2 percent white clay and 2 percent green dye, A6318 (Kohnstamm).

Summary

It is possible to use 20 percent of treated soybean meal with 40 percent of phenol-formaldehyde resin and 40 percent of wood flour without decreasing the quality of the plastic or adding undesirable properties to the molding powder, in comparison with a 50:50 mixture of resin and wood flour.

Dyeing properties are definitely improved by the use of protein material from soybeans. Moreover, the use of the protein material makes it possible to decrease the phenolic resin content because of the increased flow obtained with the soybean protein.

Research is being continued in the U. S. Regional Soybean Industrial Products Laboratory with the idea of using a larger percentage of soybean meal products in admixture with phenolic resins and obtaining a plastic which is not inferior to those now on the market.

EDITOR BLISS GOES TO ARMY

This month THE SOYBEAN DIGEST gave its able managing editor, Robert Bliss, to the nation's armed forces. Bob, who held a reserve commission in the Field Artillery, was ordered to Camp Roberts, California, on June 6. We wish him the greatest of progress in his work with Uncle Sam. He will find an occasional soybean in the army diet, we venture.

Replacing him is Kent Pellett, an Iowa State College graduate with a number of years of experience in the newspaper and job printing fields. New to soybeans, but experienced in publication work, Kent will bring to the Digest the touch of the experienced and seasoned writer and news-gatherer. This issue is a combination of Bliss and Pellett energies.

— s b d —

Manufacturing restrictions on wooden grain bins have been lifted, according to WPB information to manufacturers. Such bins must contain no metal, except nails, strap-pings and small hardware.



A. D. M. Soybean Processing Plant . . Located at Decatur, Illinois.

Other Soybean Processing
Plants Strategically
Located at:

CHICAGO
TOLEDO
MILWAUKEE
MINNEAPOLIS
BUFFALO

WHAT IS GOOD-WILL?

Good-Will is the disposition of a satisfied customer to return to the place where he has been well treated.

The Archer and Daniels families have been engaged in the Oil Milling business for a century (1840-1940), and the good-will which has been built up during those hundred years is jealously guarded in every transaction.

ARCHER - DANIELS - MIDLAND COMPANY
MINNEAPOLIS, MINN.

The Mark of



Quality Soybean Products

Feed More Protein Campaign

THAT there will be quantities of high protein feed available far in excess of any previous supply ever existent in the United States is very evident. Soybean acreage is up, flax acreage is increased, peanut acreage has taken a tremendous jump, and cotton acreage is up. Each of these crops, when processed, yields a high protein feed concentrate.

Recognizing that the problem will

be one of underconsumption of protein concentrate, rather than of overproduction, a group of 12 men representing processors of vegetable and animal feeds, feed mixers, feed dealers and Iowa State College, met at the College on June 12 to consider plans for a campaign to increase the number of users of protein supplements in livestock feeding in Iowa.

A thorough discussion of the present situation and of the problems

likely to arise when the 1942 crops start moving into market channels, was followed by the appointment of a committee to proceed with plans for a series of district meetings of feed dealers. The necessity of feeding protein feeds in order to economically produce livestock products will be stressed. Feeding tips will be passed on to the feed dealers by competent authorities. Sales helps will be suggested.

Representatives of the College and Extension Service will cooperate on the nutritional phases of the program, and the grain and feed dealers associations will be responsible for arrangements for the meetings.

Through the medium of an organized campaign it is anticipated that farmers not now feeding proteins will be contacted by local feed dealers and urged to do so. Assistance will also be offered to those now feeding, but desiring assistance on the planning of rations. Soybean oilmeal, Iowa's contribution to the protein picture, will be headlined in the Iowa campaign. A preliminary committee, consisting of A. F. Leathers, representing the processors of protein feeds, O. N. LaFollette, Iowa Department of Agriculture, and George Strayer of the American Soybean Association, was delegated to make the initial contacts and lay the groundwork for the campaign.

— s b d —

BOATS HAUL IRON

Probably only about 40 to 50 million bushels of grain may be moved on the Great Lakes this season instead of the usual 160 million bushels. Boats are being diverted to the iron ore trade. This may mean slower movement of grain and will likely increase the already acute need for farm storage, reports L. J. Norton, chief agricultural marketing, Illinois College of Agriculture.

— s b d —

749 CARS OF BEANS INSPECTED

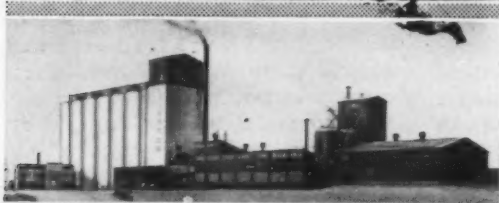
A total of 749 cars of soybeans were inspected under the Grain Standards Act for the period May 16-30. This compares with a total of 549 for the same period in April. Inspections included: Illinois, 473, Indiana, 115, Iowa, 40, Missouri, 5, and Ohio, 114.

— s b d —

The plow that broke the plains
This year must break the axis.



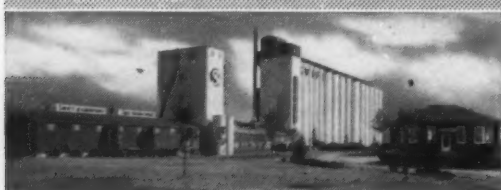
FOSTORIA, OHIO



DES MOINES, IOWA



Swift & Company's four strategically located soybean mills are going all-out to help market the unprecedented big crop of soybeans anticipated this year. In location, capacity, and broad-visioned management, these mills offer advantages that are becoming more and more important. Plan to renew your acquaintance soon with the one nearest you. We would like to hear your views, and discuss your problems with you.



CHAMPAIGN, ILLINOIS



CAIRO, ILLINOIS

SWIFT & COMPANY

**When You Are in the Market
To SELL Soybeans or
BUY Soybean Oilmeal**

Get in Touch With Our Processing Plants

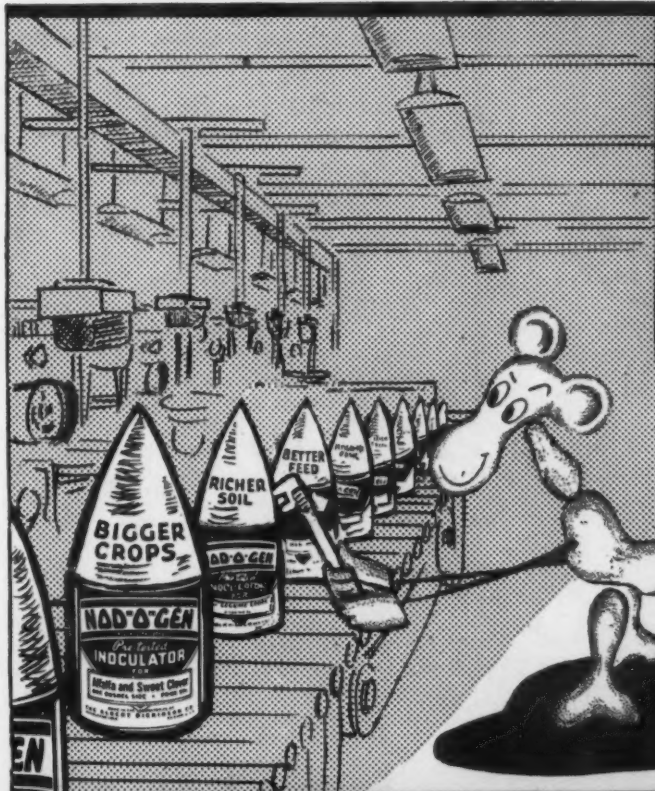
St. Louis, Mo.

Circleville, Ohio

Lafayette, Indiana

Iowa Falls, Iowa

. . . Purina Mills, St. Louis, Mo.



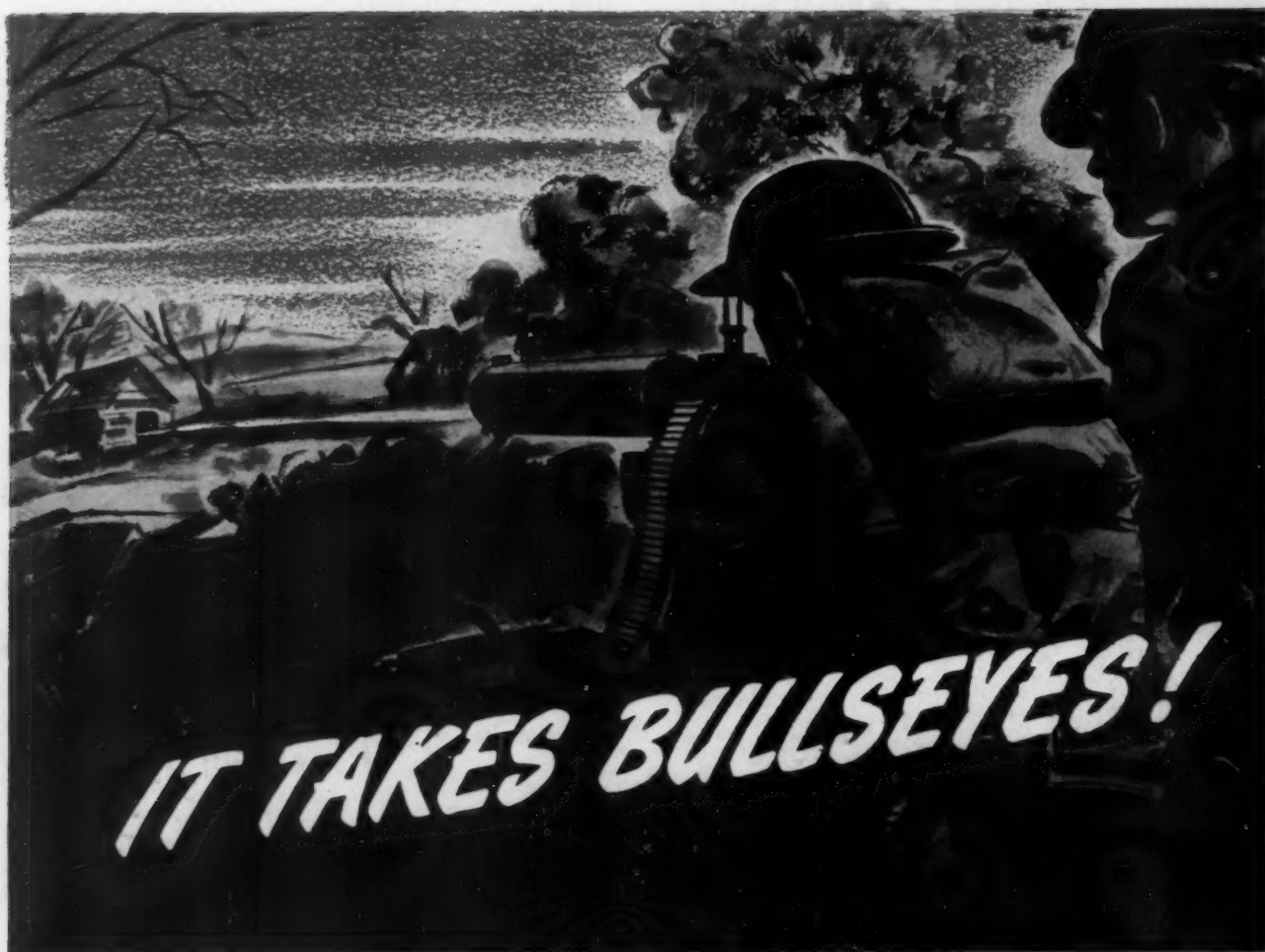
"THEY'RE ROLLING"

The NOD-O-GEN cans are rolling out . . . far more of them than ever before . . . NOD-O-GEN'S scientific methods of manufacture, supervision by a graduate bacteriologist, pretesting program and long record for top-notch performance admirably fit it for offense agriculture. Order yours today.

Inoculator Division
THE ALBERT DICKINSON COMPANY
Chicago, Illinois Est. 1854

NOD-O-GEN
The Pre-tested Inoculator

**America's Largest Selling
Complete Inoculator Line**



IT TAKES BULLSEYES!

WHEN there's a fight going on, it takes good guns and *good gunners* to win. Near hits score no knockouts!

When you've *got to have* solvents—almost getting them to you when you want them adds up to no help.

That's why it will pay you to make firsthand acquaintance with SKELLYSOLVE and Solvents Division of Skelly Oil Company. We have the sources of supply . . . the refining facilities . . . the distribution organization. The Skellysolve reputation for delivering the goods has been built on performance in the pinches. Phone, write, or wire us and you'll *get* the solvents you need when you need them.

SKELLYSOLVE

for the Extraction Method in the
SOYBEAN INDUSTRY

The Skellysolve especially refined for the extraction of soybean oil not only gets *more oil* from each bushel of soybeans but, also, the extraction process is more favorable to the retention of nutritional properties of soybean meal than either of the two mechanical processes. Skellysolve has the correct boiling range; is free from greasy residues, foreign tastes and odors. These qualities are essential to the success of the more efficient extraction method.



SKELLYSOLVE

SOLVENTS DIVISION, SKELLY OIL CO.
SKELLY BLDG., KANSAS CITY, MO.